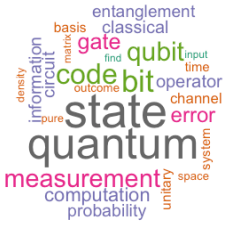

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Evidence for a Scaling Advantage on a Quantum Annealer

Thursday, December 7, 2017 9:00 AM (1 hour)

The observation of an unequivocal quantum speedup remains an elusive objective for quantum computing. In this talk I will present the first, and so far only example of a scaling advantage for an experimental quantum annealer. In comparison to classical annealing, we find that the D-Wave 2000Q processor exhibits certifiably better scaling than both simulated annealing and spin-vector Monte Carlo. However, we do not find evidence for a quantum speedup: simulated quantum annealing (a variant of quantum Monte Carlo) exhibits the best scaling by a significant margin. Our construction of instance classes exhibiting this behavior opens up the possibility of generating many new such classes, and for further definitive assessments of scaling advantages using current and future quantum annealing devices.

Presenter: Dr LIDAR, Daniel (University of Southern California)